

REMARKS

This application has been reviewed in light of the Office Action dated January 30, 2004. Claims 10-15 and 18-24 are pending in this application. Claims 16, 17, and 25 have been canceled, without disclaimer or prejudice of subject matter. Claims 10, 19, 20, and 23, which are in independent form, have been amended to define still more clearly what Applicant regards as his invention, in terms that distinguish over the art of record. Favorable reconsideration is requested.

The Office Action rejected Claims 10-25 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,757,840 (Hiroki). Cancellation of Claims 16, 17, and 25 renders the rejections moot. Applicant respectfully traverses the rejections and submits that Claim 10 is patentably distinct from Hiroki at least for the following reasons.

The aspect of the present invention set forth in Claim 10 is a laser that includes a first region, a second region, and a phase-controlling region. The first region has a first waveguide that includes a first diffraction grating. The second region has a second waveguide that includes a second diffraction grating. The phase controlling region has a third waveguide that includes a control means for controlling an effective refractive index of the third waveguide. The phase controlling region, second region, and first region are serially coupled in this order, and are constructed such that a coupling coefficient of the second region adjacent to the phase controlling region is smaller than a coupling coefficient of the first region, and the first and second diffraction gratings have a common value of pitch. In addition, a reflective layer is provided on one end of the phase controlling region.

Among the notable features of Claim 10 is that the reflective layer is provided on one end of the phase controlling region. Support in the specification for this feature can be found at least at page 10, lines 23-27. In addition, the specification at page 14, lines 19-27, discusses the benefits of having a coupling coefficient of the second region

lower than the coupling coefficient of the first region along with the reflective layer 14 formed on one end of the phase controlling region, that is, with these features the oscillation mode can be efficiently and stably modulated by control of the phase adjusting region.¹

Hiroki relates to a semiconductor laser modulation method and optical communication system using the same. The Office Action at page 4, states that Hiroki discloses, in Figure 8, a laser, “. . . having three regions a first region (125a) with a diffraction grating, a second region (125b) with a diffraction grating and a phase control region (124) where all three regions are serially coupled.” Applicant submits, however, that nothing is shown in Figure 8, and nothing is discussed in the section of the specification that discusses Figure 8 (col. 5, line 32, to col. 6, line 13), that would teach or suggest a laser that includes a phase controlling region having a reflective layer on one end.

Accordingly, Applicant submits that, at least for this reason, Claim 10 is patentable over Hiroki.

Independent Claims 19, 20, and 23 are method, apparatus, and system claims, respectively, that include the same feature of a phase controlling region having a reflective layer on one end, as discussed above in connection with Claim 10. Accordingly, Claims 19, 20, and 23 are believed to be patentable for at least the same reasons as discussed above in connection with Claim 10.

The other rejected claims in this application depend from one or another of the independent claims discussed above, and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an

¹/(It is to be understood, of course, that the scope of the claims is not limited to the details of this embodiment.)

additional aspect of the invention, individual reconsideration of the patentability of each claim on its own merits is respectfully requested.

In view of the foregoing remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,

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